Marshall Electronics

IPTV Division

2014 IP CAMERAS & ENCODERS

High Definition IP Cameras for Broadcast, High Tech Surveillance, Industrial & Medical Applications

VER. 2.0

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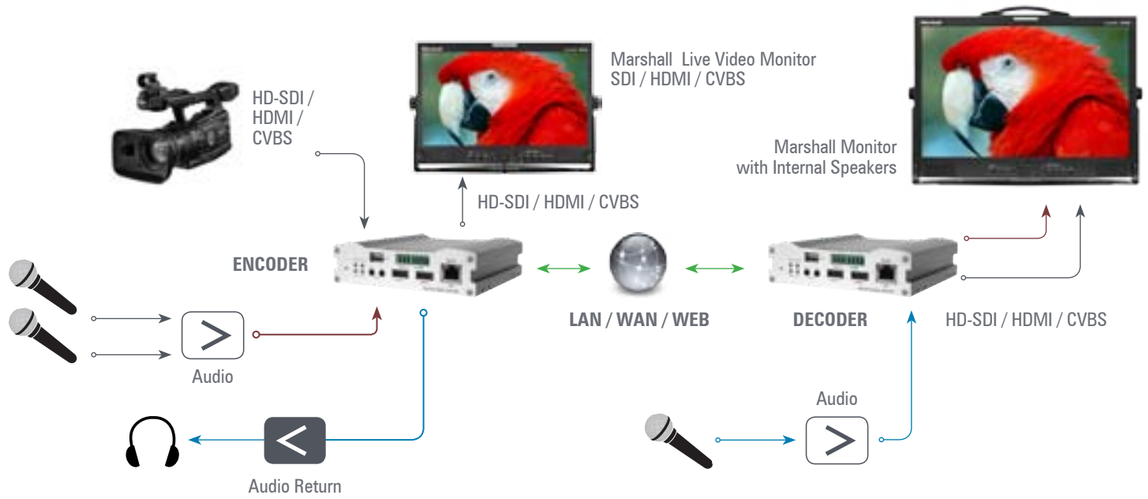
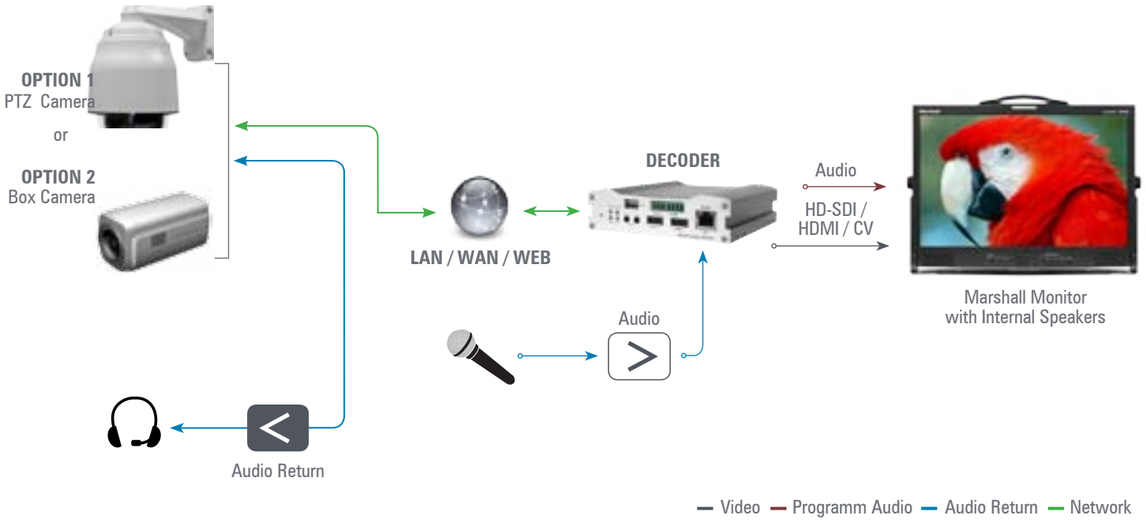
1 POINT-TO-POINT APPLICATION - ENCODER (SOURCE) TO DECODER (OUTPUT)

Showing a Professional Camera with Stereo Audio and Talkback [IFB] (Audio Return). This design works for both Intranet (Internal) and Internet (External) Applications. This Application features Bi-Direction Analog Audio in Stereo.



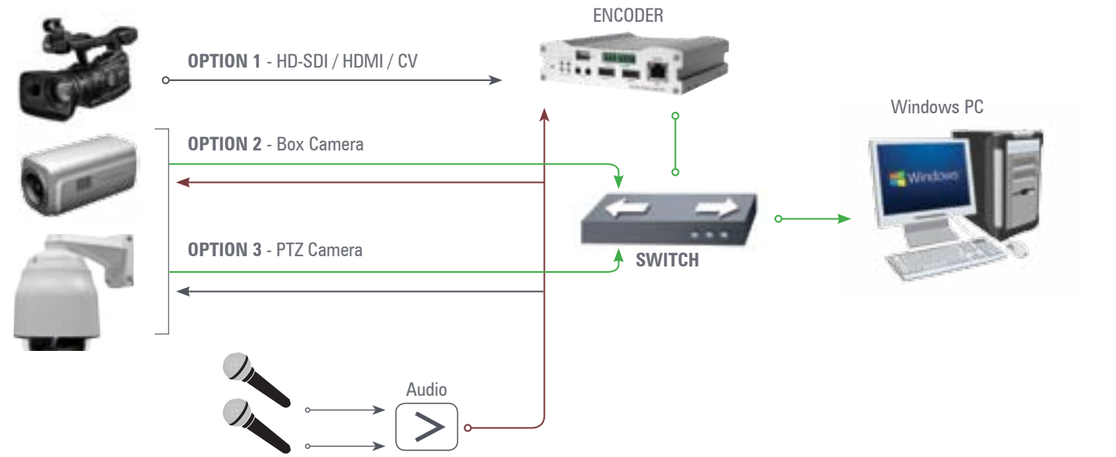
2 POINT-TO-POINT APPLICATION - IPTV CAMERA (SOURCE) TO DECODER (OUTPUT)

Showing a Marshall IPTV Camera with Audio and Talkback [IFB] (Audio Return). This design works for both Intranet (Internal) and Internet (External) Applications. This Application features Bi-Directional Analog Audio in Mono for PTZ (Pan Tilt & Zoom) Cameras and Stereo for Box Cameras. The VS-577 PTZ Camera Features Bi-Directional Stereo Analog Audio.



3 VIDEO RECORDING APPLICATION

Using a Marshall IPTV Camera (Source) or Encoder (Source) to Record on a PC an AVI File. This design works only on the Intranet (Internal). This design records AVI Files in Stereo except for the PTZ Camera, which is Mono. This Application features Bi-Directional Analog Audio in Mono for PTZ (Pan Tilt & Zoom) Cameras and Stereo for Box Cameras. The VS-577 PTZ Camera Features Bi-Directional Stereo Analog Audio.



4 MULTI-CAMERA APPLICATION

Using a Marshall IPTV Cameras (Source) and Marshall VMS (Video Management Software) Application. This design support both Intranet (Internal) and Internet (External) Applications at the same time.

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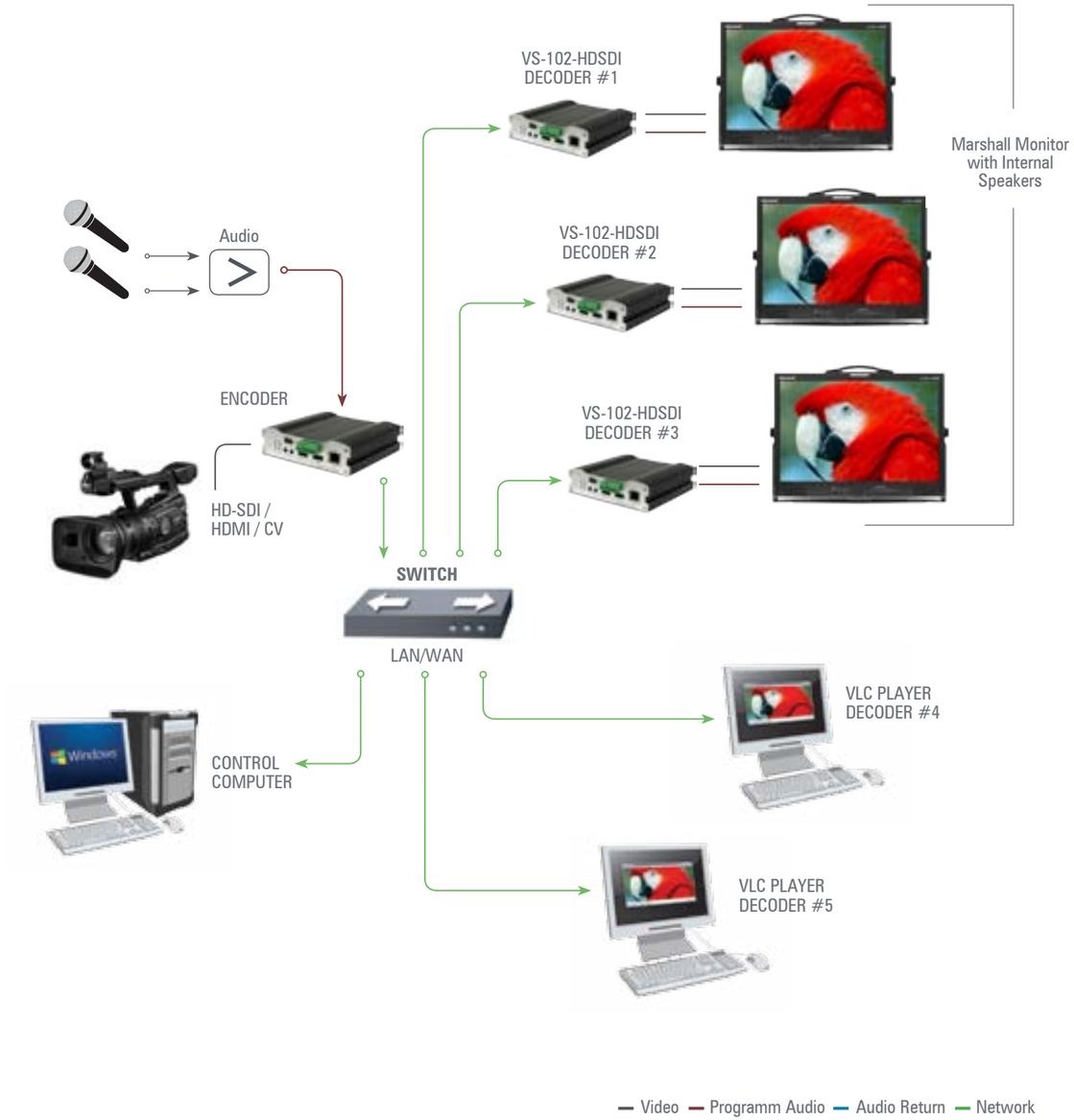
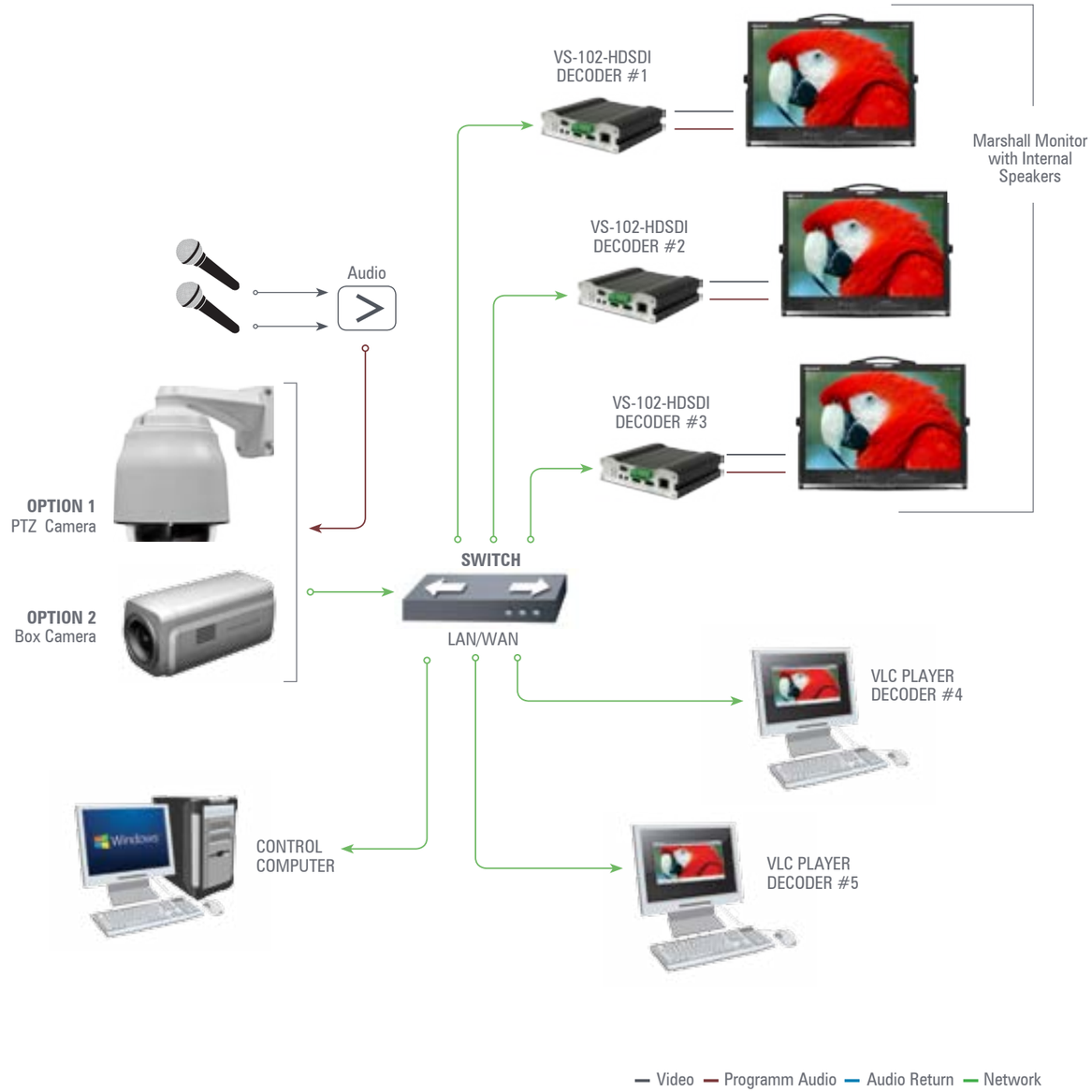
5 MULTICAST APPLICATION

Using a Marshall Hardware Encoder (Source) and Decoders (Output) together with Software Decoders (Output).
This design works only on the Intranet (Internal) network.



6 MULTICAST APPLICATION

Using a Marshall IPTV Camera (Source) and Decoders (Output) together with Software Decoders (Output).
This design works only on the Intranet (Internal) network and supports Stereo except for PTZ Cameras which are Mono. This Application features Bi-Directional Analog Audio in Mono for PTZ (Pan Tilt & Zoom) Cameras and Stereo for Box Cameras. The VS-577 PTZ Camera Features Bi-Directional Stereo Analog Audio.



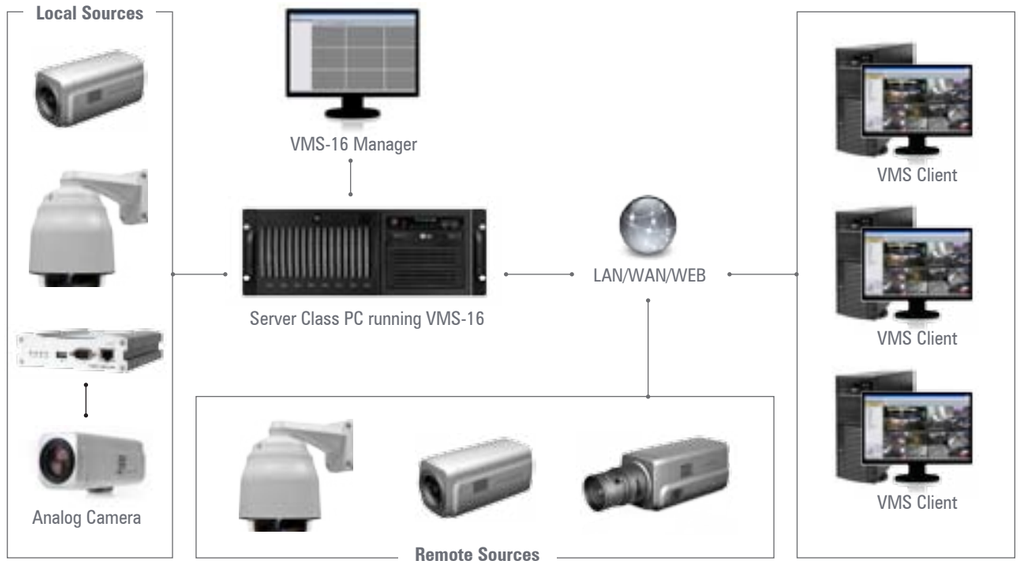
VER. 2.0

VIDEO MANAGEMENT SOFTWARE

VMS-16 is a Powerful IP Video Recording and Monitoring Software Application that provides rich features and functionality. VMS-16 provides Live Monitoring, Camera Control and Recording of up to 16 IP Cameras and Video Encoders with a common “simple-to-use” Windows Interface. The Application supports various types of event and schedule-based recording functions customizable to meet every customer’s needs. Additionally, the Relay function uses the VMS Server to retransmit streams to multiple VMS Clients. This real-time feature improves system performance and stability.

This software can be downloaded on our website: **www.lcdracks.com**

Applications



Features

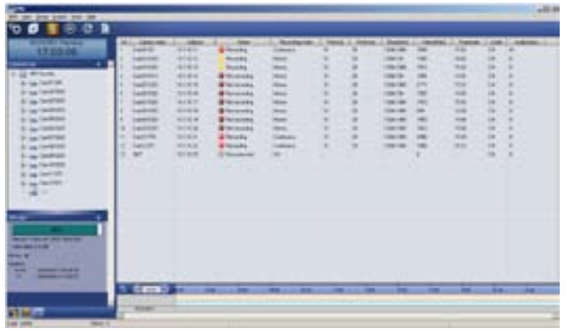
- **Manage up to 16 cameras**
- **16CH simultaneous live monitoring**
- **16CH simultaneous recording**
- **16CH simultaneous search & playback**
- **E-MAP based recording**
- **Streaming relay function**
- **Easy installation**
- **Supports Four Display Monitors**
- **Two-way audio communication**
- **Recording based on schedule-associated events**
- **Various events monitoring and alarm notification**
- **Supports H.264 and MJPEG video compression**
- **Camera group monitoring**
- **Supports megapixel cameras**
- **Customized event creation by event handler**
- **Dongle License Available for more Sources, VMS-20, VMS-36, VMS-64 and VMS-128**

VMS-16 USER INTERFACE

LIVE VIEW

- Automatic camera IP discovery
- Automatic display unit mapping
- On-screen PTZ Control
- Decoding visible channels function
- JPEG snapshot with watermarking
- Transfer of snapshot image through e-mail and FTP
- Automatic video encoding setting according to various screen modes
- Reading setup from cameras

RECORD MODE



Recording status can be monitored in this mode. More cameras can be accommodated for recording and streaming as they do not use CPU load for decoding and display.

- Pre & Post-event recording
- Customized schedule recording
- Manual storage setup
- AVI, MP4 and WMV file backup
- Copies same recording setup for many cameras

E-MAP

- Map-based monitoring
- Easy placement of cameras on a map
- Automatic video pop-up based on events
- List of all cameras on network
- Audio broadcast function
- Two-way audio communication with cameras

SEARCH & PLAYBACK

- 16CH simultaneous playback
- Remote search by events
- Bookmark function
- Holiday setup
- Easy control interface

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VS-14E

NEW PRODUCT

Marshall Electronics

IPTV Division

D1 4CH Encoder

FREE 16-Channel Video Management Software ENCLUDED

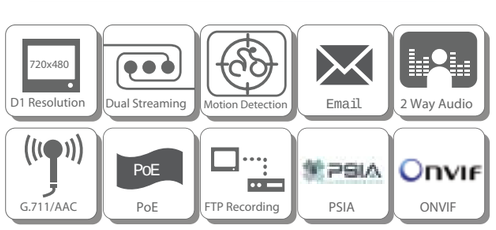
Features

- Each Channel 30fps at Full D1 Resolution
- Dual Streaming (H.264/H.264, H.264/MJPEG)
- Two Way Audio Communication (G.711, AAC)
- 4 x Composite Video Input (1CH De-mist)
- 1 x Composite Video Output (Quad)
- PoE (Power Over Ethernet)

FRONT

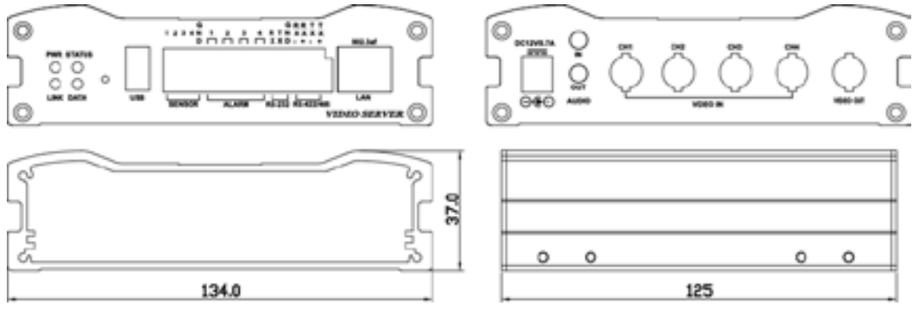
REAR

- USB Recording
- Watchdog for System Recovery
- RS-232, RS-422/485 Communication
- Motion Detection
- 4CH Sensor Input / 4CH Alarm Output
- Adjustable Video Bit Rate: 32kbps ~ 16Mbps
- Adjustable Serial Data I/O:
  2,400bps ~ 115,200bps
- Ethernet 10/100/1000 Base – T (RJ-45)



- Various Protocols:
  TCP/IP, Multicast, UDP, HTTP, SMTP, FTP, DHCP, DNS, Dynamic DNS, RTP, RTSP, SNMP
- Full Technical Support with SDK & API

Measurements in mm



VS-14E specifications

System	System Mode	Encoder
Video	Compression	H.264, MJPEG
	Framerate	Max 30fps @ 720x480, Max 25fps @ 720x576
	Bitrate	Primary: 32Kbps ~ 4Mbps (each ch), Secondary: 32Kbps ~ 1Mbps (each ch)
	Resolution	352x240 ~ 720x480 (NTSC), 352x288 ~ 720x576 (PAL)
	Streaming	Primary: H.264, Secondary: H.264/MJPEG
	Burn-in OSD	Multi-lingual
	Input	4 x Composite (1 Vpp 75 Ohm, BNC)
	Output	1 x Composite Quad Out (1 Vpp 75 Ohm, BNC)
Audio	Compression	G.711 / AAC
	Sample rate	G.711: 8KHz, AAC: 32KHz
	Bitrate	G.711: 64Kbps, AAC: 64Kbps/128Kbps
	Streaming	Full duplex
	Input	1 x Line-In (mono, mini-stereo type)
	Output	1 x Line-Out (mono, mini-stereo type)
Network	Interface	1 x Ethernet 10/100/1000base-T (RJ-45)
	Protocol	IPv4/v6, TCP, UDP, IGMP(Multicast), ICMP, DHCP, HTTP, HTTPS, RTP,RTSP, FTP, SNMP, SMTP, UPnP, WS-Discovery, Zero Configuration, NTP,
	Security	Password protection, IP address filtering, HTTPS encryption
	Application Programming Interface	MEI Protocol/SDK, ONVIF, PSIA, MPEG-TS
Event and Alarm	Event sources	Motion, Sensor input, video loss, Client disconnection
	Event actions	Notification (E-mail), FTP, PTZ preset, Alarm control, Recording
General	Housing	Aluminum
	Certifications	CE, FCC, KC, ROHS
	External devices	2 x Sensor-In (dry contact, NO/NC) 2 x Alarm-Out (dry contact, NO)
	Edge storage	1 x USB 2.0 port
	Power Supply	Min DC12V/TBD, PoE (Power over Ethernet): 802.3af
	Power Consumption	DC12V/PoE: Max 7.2W
	Operating Temp.	-10°C ~ 50°C (14°F ~ 122°F) / 20% ~ 80% RH
	Dimension	134.08(W) X 125.5(D) X 36.87(H)mm
	Weight	480g

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VER. 2.0

VS-11

Marshall Electronics

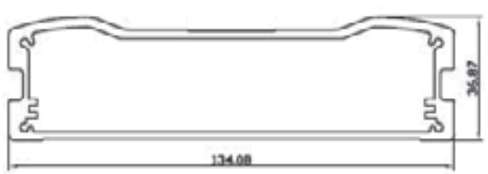
IPTV Division

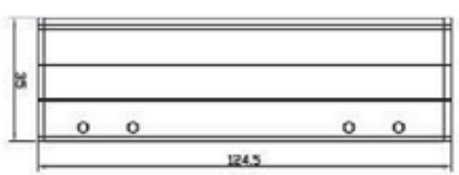
H.264 Encoder/Decoder

FREE 16-Channel Video Management Software ENCLUDED

Features

- A/V Encoder / Decoder
- Up to 30fps / 25fps @ Full D1 resolution
- H.264 & H.264 MJPEG Dual Streaming
- Encoder / Decoder Selectable
- Two-Way Audio Communication (G.711, AAC)
- Composite Video Input / Output
- Instant Recording (to optional USB 2.0)
- DDNS (Dynamic Domain Name Server)
- PoE (Power Over Ethernet): 802.3af
- Watchdog for system recovery
- Integrated Video Motion Detection
- Transmission of Video Data through FTP server
- Audio Input / Output
- RS-232 Control Built-In
- 2 Sensor Inputs
- 2 Alarm Outputs
- Wide Range of Video Bit Rate Control (32Kbps ~ 10Mbps)
- PSIA and ONVIF compliant





VS-11 Specifications

System	System Mode	Encoder or Decoder
Network	Network Interface	Ethernet 10/100Base-T (RJ-45)
	Network Protocol	TCP/IP, UDP, Multicast, DHCP, SMTP, HTTP, SNMP, RTP, RTSP
Video	Standards	H.264 compression algorithm
	Bitrate	32 ~ 10,240 Kbps
	Resolution	NTSC: 720 x 480, 720 x 240, 352 x 480, 352 x 240
		PAL: 720 x 576, 720 x 288, 352 x 576, 352 x 288
	Max Frame Rate	NTSC: Max 30fps / PAL: Max 25fps
	Frame Rate Range	NTSC: 0.2 ~ 30fps / PAL: 0.2 ~ 25fps
	Input	1 x Composite (1 Vpp 75 Ohm, BNC)
	Output	1 x Composite (1 Vpp 75 Ohm, BNC)
	Motion Detection	Sensitivity Adjustment
Audio	Standards	G.711, AAC
	Sample Rate	G.711: 8kHz / AAC: 32kHz
	Data Rate	G.711: 64Kbps, AAC: 64Kbps, 128Kbps
	Input	1 x Line-In (Mini-Stereo, Single Mono)
	Output	1 x Line-Out (Mini-Stereo, Single Mono)
Serial	Port 1	1 x RS-232 (Terminal Block)
	Port 2	1 x RS-422/485 (Terminal Block)
	Data Rate	2,400bps ~ 115,200bps
Sensor/Alarm	Sensor Input	2 x NO Contact (Terminal Block)
	Alarm Output	2 x NO Contact (Terminal Block)
	Beep	1 x Buzzer 88 dB Min
	Reset Button	1 x Factory Reset Button
User Interface	System Status	4 x LED
Storage	Recording/Backup	1 x USB 2.0 Port
Software	VS Manager/VMS-16 NVR	Live Monitoring, Recording, Search & Playback, Backup
Physical	Dimensions	134(W) x 125(D) x 35(H)mm
	Weight	464 g
	Power	DC 12V/0.5A, PoE (Power over Ethernet): 802.3af
	Power Consumption	Max 7.2W
	Operating Temperature	-10°C ~ 50°C / 14°F ~ 122°F

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VER. 2.0

VS-102-HDMI
VS-102-HDSDI

Marshall Electronics

IPTV Division

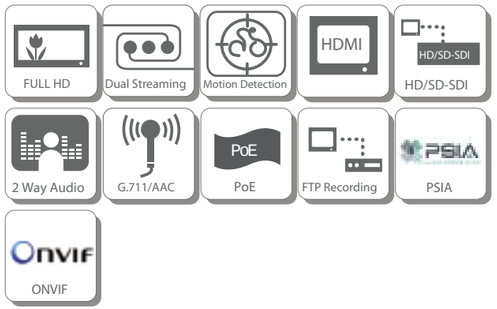
H.264 Encoder/Decoder

FREE 16-Channel Video Management Software ENCLUDED

Features

- High Quality AV Encoder / Decoder (User Selectable)
- Full HD resolution 1080p Encoding / Decoding
- Up to 30fps @ 1920 x 1080 streaming
- H.264 & H.264 MJPEG Dual Streaming
- Two-Way Audio Communication
- Mono Codec G.711 for Security applications
- Stereo Codec AAC for Broadcast applications
- HDMI Video Input / Output
- Composite Video Input / Output
- Audio Input / Output
- Instant Recording to an optional USB drive (USB 2.0)
- Supports DDNS (Dynamic Domain Name Server)
- Built-in PoE (Power Over Ethernet: 802af)
- RS-232 control built-in
- RS-422 / 485 control built-in
- 2 Sensor Inputs, 2 Alarm Outputs
- Watchdog for system recovery
- Integrated Video Motion Detection
- Transmission of Video Data through FTP server
- Wide Range of Video Bit Rate Control (32Kbps ~ 10Mbps)
- PSIA and ONVIF compliant

VS-102-HDSDI Only



VS-102 Specifications

System	System Mode	Encoder, Decoder
Network	Network Interface	Ethernet 10/100Base-T (RJ-45)
	Network Protocol	TCP/IP, UDP, Multicast, DHCP, SMTP, HTTP, SNMP, RTP, RTSP
Video	Standards	Main Stream: H.264
		Secondary Stream: H.264 MJPEG
	Bitrate	32 ~ 10,240 Kbps
	Resolution	1920 x 1080/60i ~ 352 x 240/30fps, 18 resolution step
	Frame Rate Range	1 ~ 30fps
	Input 1	1 x HDMI type-A, HDMI RX
	Input 2	VS-102-HDI: 1 x BNC: Composite (Default)
		VS-102-HDSDI: 1 x BNC: HD-SDI
	Output 1	1 x HDMI type-A, HDMI TX
	Output 2	VS-102-HDI: 1 x BNC: Composite (Default)
		VS-102-HDSDI: 1 x BNC: HD-SDI
	Motion Detection	Sensitivity Adjustment
Audio	Standards	G.711, AAC
	Sample Rate	G.711: 8kHz / AAC: 32kHz
	Data Rate	G.711: 64Kbps, AAC: 64Kbps, 128Kbps
	Input	1 x Line-In (Mini-Stereo)
	Output	1 x Line-Out (Mini-Stereo)
Serial	Port 1	1 x RS-232 (Terminal Block)
	Port 2	1 x RS-422/485 (Terminal Block)
	Data Rate	2,400bps ~ 115,200bps
Sensor/Alarm	Sensor Input	2 x NO Contact (Terminal Block)
	Alarm Output	2 x NO Contact (Terminal Block)
	Beep	1 x Buzzer 88 dB Min
	Reset Button	1 x Factory Reset Button
User Interface	System Status	4 x LED
Storage	Recording/Backup	1 x USB 2.0 Port
Software	VS Manager/VMS-16 NVR	Live Monitoring, Recording, Search & Playback, Backup
Physical	Dimensions	134(W) x 125(D) x 35(H)mm
	Weight	504 g
	Power	DC 12V/0.8A, PoE (Power over Ethernet): 802.3af
	Power Consumption	Max 9.6W
	Operating Temperature	-10°C ~ 50°C / 14°F ~ 122°F

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VS-103E-3GSDI

Marshall Electronics
IPTV Division

1080p59.94 Full HD Video Server

FREE 16-Channel Video Management Software ENCLUDED

Features

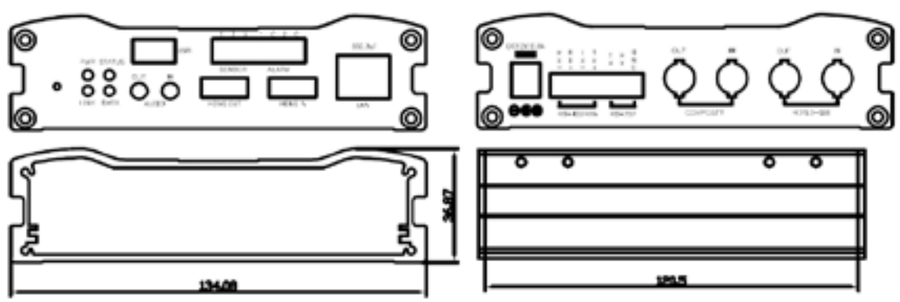
- **Max. 60fps at 1920 x 1080**
- Quad Streaming (H.264/H.264, H.264/MJPEG)
- **MPEG2-TS Supported**
- Two Way Audio Communication (G.711, AAC)
- **3G/HD/SD-SDI, HDMI, & CVBS I/O**
- **Audio Embedded in 3G/HD/SD-SDI & HDMI**
- Over 30 Types of PTZ Protocol Supported

FRONT

REAR

- PoE (Power Over Ethernet)
- USB Recording
- Watchdog for System Recovery
- RS-232, RS-422/485 Communication
- Motion Detection
- 2CH Sensor Input / 2CH Alarm Output
- Adjustable Video Bitrate:
  32Kbps ~16Mbps for Primary Video,
  32Kbps ~1Mbps for Secondary Video
- Adjustable Serial Data I/O
- Various Protocols:
  TCP/IP, Multicast, UDP, HTTP, SMTP, FTP, DHCP, DNS, Dynamic DNS, RTP, RTSP, SNMP
- Full Technical Support with SDK & API

Measurements in mm



VS-103E-HDSDI specifications

System	System Mode	Encoder
Video	Compression	H.264, MJPEG
	Framerate	Max 60fps @ 1920x1080
	Bitrate	Primary: 32Kbps ~ 16Mbps, Secondary: 32Kbps ~ 4Mbps
	Resolution	352x240 ~ 1920x1080
	Streaming	Primary: H.264, Secondary x 3: H.264/MJPEG
	Burn-in OSD	Multi-lingual
	Input	1 x HDMI (Type A) 1 x Composite (BNC) 1 x 3G-SDI (BNC)
	Output	1 x HDMI (Type A), Input Loop-Through 1 x CVBS (BNC), Input Loop-Through 1 x 3GSDI (BNC), Input Loop-Through
Audio	Compression	G.711 / AAC
	Sample rate	G.711: 8KHz, AAC: 32/44.1/48KHz
	Bitrate	G.711: 64Kbps, AAC: 64Kbps/128Kbps
	Streaming	Full duplex
	Input	1 x Line-In (stereo, mini-stereo type)
	Output	1 x Line-Out (stereo, mini-stereo type)
Network	Interface	Ethernet 10/100/1000 base-T (RJ-45)
	Protocol	IPv4/v6, TCP, UDP, IGMP (Multicast), ICMP, DHCP, HTTP, HTTPS, RTP, RTSP, FTP, SNMP, SMTP, UPnP, WS-Discovery, Zero Configuration, NTP, DDNS
	Security	Password protection, IP address filtering, HTTPS encryption
	Application Programming Interface	MEI Protocol/SDK, ONVIF, PSIA, MPEG-TS
General	Event sources	Motion, Sensor input, Video loss, Client disconnection
	Event actions	Notification (E-mail), FTP, PTZ preset, Alarm control, Recording
	Housing	Aluminum
	Certifications	CE, FCC, KC, ROHS
	External devices	2 x Sensor-In (dry contact, NO/NC) 2 x Alarm-Out (dry contact, NO) 1 x RS-232 port 1 x RS-422/485 port 1 x Buzzer (88dB min)
	Edge storage	1 x USB 2.0 port
	Power Supply	Min DC12V/1.0A, PoE (Power over Ethernet): 802.3af
	Power Consumption	DC12V/PoE: Max 9.6W
	Operating Temp.	-10°C ~ 50°C (14°F ~ 122°F) / 20% ~ 80% RH
	Dimension	134.08(W) X 125.5(D) X 36.87(H)mm
	Weight	470g

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VER. 2.0

VS-104-3GSDI

Marshall Electronics

IPTV Division

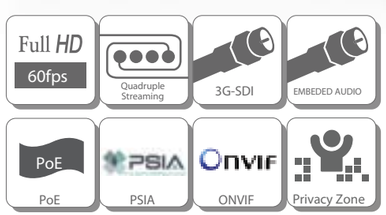
NEW PRODUCT

1080p59.94 Full HD Video Server

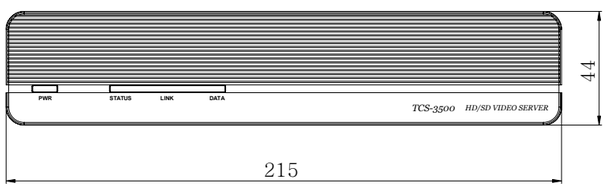
FREE 16-Channel Video Management Software ENCLUDED

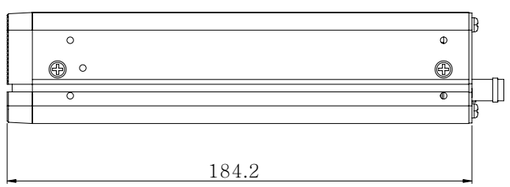
Features

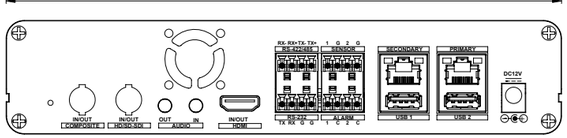
- **Max. 60fps at 1920 x 1080**
- Quad Streaming (H.264/H.264, H.264/MJPEG)
- **MPEG2-TS Supported**
- Two Way Audio Communication (G.711, AAC)
- **3GSDI, HDSDI, SDI, HDMI and CVBS I/O Supported**
- **Embedded Audio is supported in 3GSDI, HDSDI, SDI and HDMI, Stereo Analog is also provided**
- Over 30 Types of PTZ Protocol Supported
- **The VS-104-3GSDI can be used as either a Encoder or Decoder (User Selectable)**



- PoE+ (Power over Ethernet): 802.3at
- USB Recording
- Watchdog for System Recovery
- RS-232, RS-422/485 Communication
- Motion Detection
- 2CH Sensor Input / 2CH Alarm Output
- Adjustable Video Bitrate:
  32Kbps ~ 16Mbps for Primary Video,
  32Kbps ~ 4Mbps for Secondary to Quartic Video
- Adjustable Serial Data I/O
- Various Protocols:
  TCP/IP, Multicast, UDP, HTTP, SMTP, FTP, DHCP, DNS, Dynamic DNS, RTP, RTSP, SNMP
- Full Technical Support with SDK & API







Measurements in mm

VS-104-3GDSDI specifications

System	System Mode	Encoder / Decoder
Video	Compression	H.264, MJPEG
	Framerate	Max 60fps @ 1920x1080
	Bitrate	Primary: 32Kbps ~ 16Mbps, Secondary: 32Kbps ~ 4Mbps
	Resolution	352x240 ~ 1920x1080
	Streaming	Primary: H.264, Secondary x 3: H.264/MJPEG
	Burn-in OSD	Multi-lingual
	Input/Output	1 x HDMI (Type A), Input/Output configurable 1 x Composite (BNC), Input/Output configurable 1 x 3G-SDI (BNC), Input/Output configurable
Audio	Compression	G.711 / AAC
	Sample rate	G.711: 8KHz, AAC: 32/44.1/48KHz
	Bitrate	G.711: 64Kbps, AAC: 64Kbps/128Kbps
	Streaming	Full duplex
	Input	1 x Line-In (stereo, mini-stereo type)
	Output	1 x Line-Out (stereo, mini-stereo type)
Network	Interface	2 x Ethernet 10/100/1000Base-T (RJ-45)
	Protocol	IPv4/v6, TCP, UDP, IGMP(Multicast), ICMP, DHCP, HTTP, HTTPS, RTP, RTSP, FTP, SNMP, SMTP, UPnP, WS-Discovery, Zero Configuration, NTP, DDNS
	Security	Password protection, IP address filtering, HTTPS encryption
	Application Programming Interface	MEI Protocol/SDK, ONVIF, PSIA, MPEG-TS
General	Event sources	Motion, Sensor input, Video loss, Client disconnection
	Event actions	Notification (E-mail), FTP, PTZ preset, Alarm control, Recording
	Housing	Aluminum
	Certifications	CE, FCC, KC, ROHS
	External devices	2 x Sensor-In (dry contact, NO/NC) 2 x Alarm-Out (dry contact, NO) 1 x RS-232 port 1 x RS-422/485 port 1 x Buzzer (88dB min)
	Edge storage	2 x USB 2.0 port
	Power supply	Min DC12V TBD, PoE+ (Power over Ethernet): 802.3at
	Power Consumption	DC12V/PoE+ / Max: TBD
	Operating Temp.	-10°C ~ 50°C (14°F ~ 122°F) / 20% ~ 80% RH
	Dimension	215mm(W) x 184.2mm(L) x 44mm(H)
	Weight	940g

Features, specifications, and dimensions are subject to change without notice.
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VER. 2.0

VS-541-HDSDI
VS-541-HDI

Marshall Electronics

IPTV Division

2.0 MP 20x Zoom IP Box Camera

FREE 16-Channel Video Management Software ENCLUDED

VS-541-HDI

VS-541-HDSDI

Features

- 2 MP 1/2.8” 1920 x 1080 CMOS Sensor
- Full HD resolution 1080p30 / 1080i60 Video and Audio Encoding
- 20x Optical Zoom Lens Built-in (F1.6 ~ F3.5, f=4.7mm ~ 94mm)
- 240x Zoom (20x Optical Zoom, 12x Digital Zoom)
- Up to 30fps @ 1920 x 1080 live streaming
- H.264 & H.264 MJPEG Dual Streaming
- HD-SDI Video Output (VS-541-HDSDI)
- Two-Way Audio Communication (G.711/AAC)
- True Day & Night (Motorized IR Cut Filter)
- BLC (Back Light Compensation)
- WDR (Wide Dynamic Range)
- SD™ Card Recording
- RS-485 Communication, Pelco D or Pelco P Protocol
- Integrated Video Motion Detection
- 1 Motion Sensor Input & 1 Alarm Output
- Built-in PoE (Power Over Ethernet: 802af)
- Various Protocols: TCP/IP, Multicast, UDP, HTTP, SMTP, FTP,
- DHCP, DNS, Dynamic DNS, RTP, RTSP, SNMP
- PSIA and ONVIF compliant
- SDK & API Available

VS-541 Specifications

Network	Network Interface	Ethernet 10/100Base-T (RJ-45)
	Network Protocol	TCP/IP, UDP, Multicast, DHCP, SMTP, HTTP, SNMP, RTP, RTSP
Camera	Image Sensor	2.0MP 1/2.8” CMOS Image Sensor
	Focal Length	F1.6 ~ F3.5, f=4.7mm ~ 94mm
	Zoom	20x Optical Zoom and 12x Digital Zoom
	Focus Position	∞ ~ 1 cm
	Angle of View	Horizontal: 54.1(Wide) ~ 3.0(Tele)
	Minimum Illuminance	1.7 Lux (Color) .03 Lux (B/W), F1.8 with 50 IRE
	S/N Ratio	50 dB or more
	AE Mode	Auto, Manual, Bright, Shutter Priority, Iris Priority, Spot
	IRIS Control	Auto / Manual (F1.8 ~ F26, Close)
	Gain Control	Auto / Manual (-3 ~ 18 dB)
	Shutter Control	Auto / Manual (1/2 ~ 1/10,000 sec)
	White Balance	Auto / Manual (Red, Blue Gain Adjustable)
	DSS Limit	1/60 ~ 1/2 or 1/50 ~ 1/2
	Day & Night	Auto / Day / Night (ICR)
	BLC	Auto / Manual
	WDR	On / Off
	Aperture Control	16 steps
Video	Standards	Main Stream: H.264
		Secondary Stream: H.264 MJPEG
	Bitrate	32 ~ 10,240 Kbps
	Resolution	1920 x 1080 ~ 352 x 240, 18 resolution steps
	Max Frame Rate	H.264/MJEPG: 30fps @ all resolutions
	Output	VS-541-HDSDI - 1 x HDSDI (BNC Connector)
		VS-541-HDI - 1 x HDMI Connector
Audio	Algorithm	G.711/AAC
	Sample Rate	G.711: 8kHz / AAC: 32kHz
	Bitrate	G.711: 64Kbps, AAC: 64Kbps, 128Kbps
	Input	1 x Line-In (Mini-stereo)
	Output	1 x Line-Out (Mini-stereo)
Serial Port	Port	1 x RS-485
	Data Rate	2,400bps ~ 115,200bps
Sensor/Alarm	Sensor Input	1 x Photo-Coupler Input
	Alarm Output	1 x Relay Output (Normal Open)
	Reset Button	Factory Reset Button
User Interface	System Status	LED
Software	VS-NVR/VMS	Live Monitoring, Recording, Search & Playback, Backup
Physical	Dimensions	167.1(L) x 74(W) x 73(H)mm/6.6(L) x 2.9(L) x 2.9(H)in
	Weight	685 g / 1.5 lbs
	Power Source	DC 12V/0.7A
		PoE: 802.3af
	Power Consumption	Max 8.5W
	Operating Temperature	-10°C ~ 50°C / 14°F ~ 122°F

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VER. 2.0

VS-547-3GSDI
VS-547-HDI

Marshall Electronics

IPTV Division

NEW PRODUCT

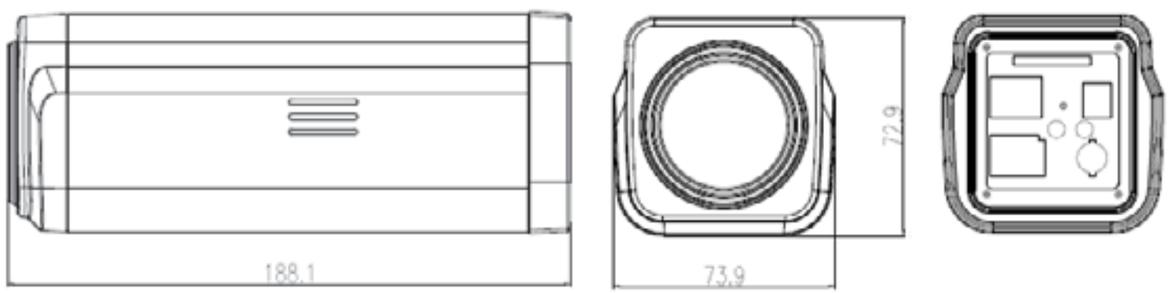
1080p/59,94 30x Zoom Hybrid Broadcast/ IPTV Box Camera

FREE 16-Channel Video Management Software ENCLUDED

Features

- 1/2.8” Progressive Scan CMOS
- 2.0 MP 30X Optical Zoom, 12X Digital Zoom
- Supports up to 1080p/59.94 or 1080i/59.94
- 1 x Video Out
- 3GSDI Model supports Low Latency Live Video Out
- Quad H.264 Streams Out
- Camera Matches Photometrically with the VS-577A
- Two Way Audio in Stereo
- Max Stream Out: 1920x1080 at 60FPS
- Adjustable Video Bitrate: 32Kbps ~ 16Mbps for Primary Video, 32Kbps ~ 4Mbps for Secondary Video Streams
- True Flickerlless WDR (Wide Dynamic Range)
- SD Card Recording
- RS-485 Serial Control supporting Pelco D or Pelco P Protocol
- Various protocols supported: TCP/IP, Multicast, UDP, HTTP, SMTP & FTP
- DHCP, DNS, Dynamic DNS, RTP, RTSP, SNMP
- Dual Power Options of 12V DC or PoE (802af)
- ONVIF, PSIA Compliant
- Models available for 3GSDI Output or HDMI Output

VS-547-3GSDI shown



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VS-547-3GSDI Specifications

Network	Network Interface	Ethernet 10/100base-T (RJ-45)
	Network Protocol	IPv4/v6, TCP, UDP, IGMP(Multicast),DHCP, HTTP, HTTPS, RTP, RTSP, FTP, SNMP, SMTP, UPnP, WS-Discovery, Zero Configuration, DDNS
	Security	Password protection, IP address filtering, HTTPS encryption
	API	MEI Protocol, SDK, ONVIF, PSIA, MPEG-TS
Camera	Image Sensor	1/2.8” Exmor CMOS
	Focal Length	f=4.6 ~ 129mm
	Zoom	Optical x30 Digital x12
	Lens Type	AF, Auto iris
	Angle of View	Horizontal : 63.7°(wide) ~ 2.3°(tele) with 1080p60 mode
	Minimum Illuminance	Normal : 0.5Lux(color), 0.1Lux(B/W, ICR on) with 50IRE
	Maximum aperture ratio	F1.6 ~ F4.7
	Minimum illumination	Normal : 0.5Lux(color), 0.1Lux(B/W, ICR on) with 50IRE
	Electronic shutter speed	1/1 ~ 1/10,000 sec
	Privacy masking	4 regions
	Flip mode	Horizontal, Vertical
	Image enhancement	AE, AWB, AGC, TDN, DNR, BLC, ACCE, WDR, DSS, EIS, Defog
Video	Compression	H.264, MJPEG
	Bitrate	Primary : 32Kbps ~ 16Mbps, Secondary x3 :32Kbps ~ 4Mbps
	Resolutions	352x240 ~ 1920x1080
	Max Frame Rate	60fps @ 1920x1080
	Output	Direct 3G-SDI live view
	Streaming	Primary : H.264, Secondary x 3 : H.264/MJPEG
	Burn-in OSD	Multi-lingual
Audio	Compression	G.711/AAC
	Sample Rate	G.711 : 8 KHz, AAC : 32 kHz / 44.1 kHz / 48 kHz
	Bitrate	G.711 : 64Kbps, AAC: 64Kbps/128Kbps
	Streaming	G.711 : Full-duplex, AAC : Half-duplex
	Input	1 x Line-In (Mini Stereo)
	Output	1 x Line-Out (Mini Stereo)
Event	Event sources	Motion, Sensor input, Client disconnection
	Event actions	Notification(E-mail), FTP, PTZ preset, Alarm control, Recording
General	Certifications	CE, FCC, KC, RoHS
	External devices	1 x Sensor-In (dry contact, NO/NC) 1 x Alarm-Out (dry contact, NO) 1 x RS-485 port
	Edge storage	SD/SDHC slot
	Power supply	Min DC12V/1.5A, PoE(Power over Ethernet) : 802.3af
	Power consumption	DC12V/PoE : Max DC12V/9.6W
	Operating condition	-10°C ~ 50°C (14°F ~ 122°F) / 20% ~ 80% RH
	Dimension	74 (W) x 188.1 (L) x 73 (H) [mm]
	Weight	920g

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VER. 2.0

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VS-571A-HDSDI
VS-571A-CVBS

Marshall Electronics

IPTV Division

NEW PRODUCT

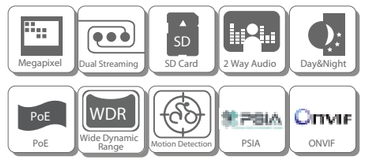
1080p, x20 Zoom IP PTZ Camera

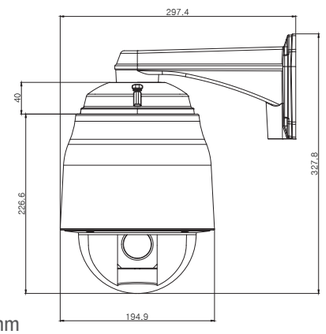
FREE 16-Channel Video Management Software ENCLUDED

Features

- 1/2.8” Progressive CMOS
- Max. 30fps @ 1920 x 1080
- x20 Optical Zoom, x12 Digital Zoom
- Dual Streaming (H.264/H.264, H.264/MJPEG)
- True Day & Night (ICR)
- RS-485 Communication, Pelco D or Pelco P Protocol
- Motion Detection for Instant Alarm & Recording
- Two Way Audio Communication (G.711/AAC)
- ONVIF, PSIA Compliant
- SD Card, FTP Recording
- PoE+ (Power over Ethernet): 802.3at
- Adjustable Video Bitrate: 32Kbps ~ 10Mbps for Primary Video, 32Kbps ~ 1Mbps for Secondary Video
- Models available supporting HDSDI or CVBS Video Outputs
- Fast & Smooth Motion with 360° Pan Rotation
- Max. 128 Presets, Max. 8 Swings, Max. 4 Patterns, Max. 8 Groups Function, Privacy Mask Function
- Vandal-Proof & IP67
- WDR (Wide Dynamic Range), BLC (Back Light Compensation)
- Auto Parking / Power Up Action function

* Shown with optional Wall Mounting Bracket VS-B570A-W





Measurements in mm

VS-571A-CVBS / VS-571A-HDSDI specifications

Camera	Image sensor	1/2.8” Progressive CMOS
	Zoom	Optical x20 Digital x12
	Focal length	f= 4.45 ~ 89mm
	Maximum aperture ratio	F1.6 ~ F2.9
	Angle of view	Horizontal: 55.4°(wide) ~ 2.9°(tele)
	Minimum illumination	Normal: 1.7Lux(color), 0.3Lux(B/W, ICR On) with 50IRE High Sensitivity: 0.5Lux (color), 0.095Lux (B/W ICR On) with 50IRE
	Electronic shutter speed	1/1 ~ 1/10,000 sec
	Privacy masking	8 regions
	Flip mode	Horizontal, Vertical
	Image enhancement	AE, AWB, AGC, TDN, WDR, BLC, DNR, DSS
	IR LED	N/A
Video	Compression	H.264, MJPEG
	Frame rate	Max 30fps @ 1920x1080
	Bitrate	Primary: 32Kbps ~ 10Mbps, Secondary: 32Kbps ~ 1Mbps
	Resolutions	352x240 ~ 1920x1080
	Streaming	Primary: H.264, Secondary: H.264/MJPEG
	Burn-in OSD	English
	Output	Composite / HD-SDI
Audio	Compression	G.711 / AAC
	Sampling rate	G.711: 8KHz, AAC: 32KHz
	Bitrate	G.711: 64Kbps, AAC: 64Kbps/128Kbps
	Streaming	Full duplex
	Input/Output	1 x Line-In (mono, RCA type), 1 x Line-Out (mono, RCA type)
PTZ control	Operating angle	Horizontal: 360°, Vertical: 90°
	Speed	Continuous (Jog) move speed: 0.1° ~ 360°/sec Position move speed: 2° ~ 500°/sec
	PTZ functionalities	Preset (128), Pattern (4), Swing (8), Group (8), Auto parking, Zoom proportional jog, Freeze on position move, Power-up action, Event holding
Network	Interface	Ethernet 10/100base-T (RJ-45)
	Protocol	IPv4/v6, TCP, UDP, IGMP(Multicast), ICMP, DHCP, HTTP, HTTPS, RTP, RTSP, FTP, SNMP, SMTP, UPnP, WS-Discovery, Zero Configuration, NTP, DDNS
	Security	Password protection, IP address filtering, HTTPS encryption
	Application programming interface	MEI Protocol/SDK, ONVIF, PSIA, MPEG-TS
Event and Alarm	Event sources	Motion, Sensor input, Client disconnection
	Event actions	Notification (E-mail), FTP, PTZ preset, Alarm control, Recording
General	Housing	IP67
	Certifications	CE, FCC, KC, ROHS
	External devices	2 x Sensor-In (dry contact, NO/NC) 2 x Alarm-Out (dry contact, NO) 1 x RS-485 port: Direct PTZ control etc.
	Edge storage	SD/SDHC slot
	Power supply	Min DC12V/3.0A, Min AC24V/2.5A, PoE+(Power over Ethernet) : 802.3at
	Power consumption	DC12V/PoE+: Max 21.6W, AC24V : Max 48W
	Operating condition	-10°C ~ 50°C (14°F ~ 122°F) / 20% ~ 80% RH
	Dimension	Dome: Ø148 mm/ Ø 5.8"
	Weight	3,060g

Features, specifications, and dimensions are subject to change without notice.
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VER. 2.0

VS-577A-3GSDI
VS-577A-CVBS

Marshall Electronics

IPTV Division

NEW PRODUCT

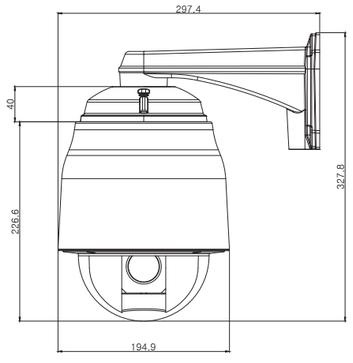
1080p/59,94 30x Zoom Hybrid Broadcast/ IPTV PTZ Camera

FREE 16-Channel Video Management Software ENCLUDED

Features

- 1/2.8” Progressive Scan CMOS
- 2.0 MP 30X Optical Zoom, 12X Digital Zoom
- Supports up to 1080p/59.94 or 1080i/59.94
- 1 x Video Out
- 3GSDI Model supports Low Latency Live Video Out
- Quad H.264 Streams Out
- True Day & Night (ICR)
- Camera Matches Photometrically with the VS-547
- Two Way Audio in Stereo
- Max Stream Out: 1920x1080 at 60FPS
- True Flickerlless WDR (Wide Dynamic Range)
- Micro SD Card Recording
- Motion Detection for Instant Alarm & Recording
- Adjustable Video Bitrate: 32Kbps~16Mbps for Primary Video, 32Kbps ~ 4Mbps for Secondary Video Streams
- Fast & Smooth Motion with 360° Pan Rotation (continuous)
- RS-485 Serial Control supporting Pelco D or Pelco P Protocol
- Various protocols supported: TCP/IP, Multicast, UDP, HTTP, SMTP & FTP
- DHCP, DNS, Dynamic DNS, RTP, RTSP, SNMP
- Auto Parking / Power Up Action Function
- Dual Power Options of 12V DC or PoE+ (802at)
- ONVIF, PSIA Compliant
- Models available for 3GSDI Output or CVBS Output

* Shown with optional Wall Mounting Bracket VS-B570AB-W



VS-577A-3GSDI Specifications

Network	Network Interface	Ethernet 10/100/1000base-T (RJ-45)
	Protocol	IPv4/v6, TCP, UDP, IGMP(Multicast),DHCP, HTTP, HTTPS, RTP, RTSP, FTP, SNMP, SMTP, UPnP, WS-Discovery, Zero Configuration, DDNS
	Security	Password protection, IP address filtering, HTTPS encryption
	API	MEI Protocol, SDK, ONVIF, PSIA, MPEG-TS
Camera	Image sensor	1/2.8” Exmor CMOS
	Zoom	Optical x30, Digital x12
	Focal length	f=4.9 ~ 129mm
	Maximum aperture ratio	F1.6 ~ F4.7
	Angle of view	Horizontal : 63.7°(wide) ~ 2.3°(tele)
	Minimum illumination	Normal : 1.4Lux(color), 0.19Lux(B/W, ICR Off) with 50IRE High Sensitivity: 0.013Lux(color), 0.002Lux(B/W ICR On) with 50IRE
	Electronic shutter speed	1/1 ~ 1/10,000 sec
	Privacy masking	8 regions
	Flip mode	Horizontal, Vertical
	Image enhancement	AE, AWB, AGC, TDN, DNR, BLC, WDR, DSS, Defog, Color Enhancement
Video	Compression	H.264, MJPEG
	Frame rate	Max 60fps @ 1920x1080
	Bitrate	Primary : 32Kbps ~ 16Mbps, Secondary x3 :32Kbps ~ 4Mbps
	Resolutions	352x240 ~ 1920x1080
	Streaming	Primary : H.264, Secondary x 3 : H.264/MJPEG
	Burn-in OSD	Multi-lingual
	Output	3GSDI - Low Latency Live Output
Audio	Compression	G.711 / AAC
	Sampling rate	G.711 : 8 KHz, AAC : 32 kHz / 44.1 kHz / 48 kHz
	Bitrate	G.711 : 64Kbps, AAC: 64Kbps/128Kbps
	Streaming	G.711 : Full-duplex, AAC : Half-duplex
	Input / Output	1 x Line-In (stereo, RCA type), 1 x Line-Out (stereo, RCA type)
Event	Event sources	Motion, Sensor input, Client disconnection
	Event actions	Notification(E-mail), FTP, PTZ preset, Alarm control, Recording
General	Housing	IP67
	Certifications	CE, FCC, KC, RoHS
	External devices	2 x Sensor-In (dry contact, NO/NC) 2 x Alarm-Out (dry contact, NO) 1 x RS-485 port: Direct PTZ control etc
	Edge storage	Micro SD
	Power supply	Min 12V/3A, Min 24V//3.5A, PoE+ (Power over Ethernet): 802.3at
	Power consumption	DC12V/PoE+ : Max 30W, AC24V : Max 48W
	Operating condition	-10°C ~ 50°C (14°F ~ 122°F)
	Dimension	Dome : Ø148 mm/ Ø 5.8”
	Weight	3,020g (Housing Net : 3,440g)

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VER. 2.0

Mounting Brackets for V-370 and VS-570 Series Dome Cameras

VS-B570A-W
Wall Mounting Bracket in White
(For Indoor and Outdoor use)
VS-57XA Series Camera

VS-B570AB-W
Wall Mounting Bracket in Black
(For Indoor and Outdoor use)
VS-577A Series Camera

VS-B570A-C
Ceiling Mount Bracket
(For Indoor / Outdoor use)
VS-57XA Series Cameras

VS-B570-P
Pipe Mount Bracket
(For Indoor / Outdoor use)
VS-57X / VS-57XA Series Cameras

VS-B570-R
Corner Mount Bracket
(For Indoor / Outdoor use)
VS-57X / VS-57XA Series Cameras

VS-C570
Mounting Cup for Speed Dome Cameras. Fits all VS Speed Dome Cameras except the VS-370-X10 and VS-370-X12

VS-TKC-100 PTZ Keyboard Controller

- USB mouse function
- Operates with a 9V battery
- Controls up to 255 cameras
- Multiple protocols supported in each channel
- RS-485 / RS-422 communication (Tx: 3 port, TRx: 1 port)
- Programmable user preferences (Preset, Tour, Pattern, etc.)
- Built-in 3-Axis proportional joystick
- Easy upload of programming data via serial communication
- Built-in LCD with 2 lines of characters
- User password support
- Programmable transmission speed for each ID (2.4~57.6Kbps)

Keyboard Communication	Interface: RS-485 / RS-422	Power Consumption	Max. 140mA
	Operation distance: 4000ft (1.2km) on 24 AWG wire	LCD Display	Graphic Display 16 characters x 2 lines
	Protocol: Multiple	Operating Temperature	0˚C ~ 45˚C
	(Pelco-D, Pelco-P, Etc.) (Baud rate selectable)	Humidity	10% ~ 70% Non-condensing
Connector Type Data	TERMINAL BLOCK (8p)	Dimensions	280(W) x 100.08(H) x 179.3(D)mm
Keyboard Button	Rubber button	Weight	≈ 1.5 lbs
	Numeric keypad and camera function keys	In the package	TKC-100 Keyboard, AC Power Adapter (100-240V)
Joystick	3-axis, variable speed with zoom		USB Cable, Manual, Terminal block (8p)
Input Voltage	DC 12V or 9V battery (Battery mode)		

CS Mount Varifocal Lenses with DC Auto Iris

For use with VS-series CS mount MegaPixel Box Cameras

Varifocal lenses permit users to change the effective focal length (EFL) and the horizontal angle of view.
This flexibility allows camera installations in a variety of places that often require lenses of different focal lengths.

CS Mount Megapixel Varifocal Lenses:

Model	Focal Length (mm)	F-Stop	1/4" Sensor	1/3" Sensor	1/2.5" Sensor
VS-M246A	2.4 ~ 6	F1.4	74° ~ 34°	90° ~ 43°	98° ~ 49°
VS-M408A	4 ~ 8	F1.4	48° ~ 25°	62° ~ 33°	70° ~ 38°
VS-M4012A	4 ~ 12	F1.4	48° ~ 17°	62° ~ 22°	70° ~ 36°
VS-M550A	5 ~ 50	F1.4	40° ~ 4°	50° ~ 5.4°	58° ~ 6.3°

Wide Angle Lens Adapters

For use with VS-540 and VS-541 to increase angle of view

High quality optical glass lens adapters increase the viewing angle from 0.7x to 0.3x magnification.
Various lens adapter rings are included for use on other models of cameras and camcorders.

Wide Angle Lens Adapters:

Model	Description	Adapter Rings Included	Camera Compatibility	
			VS-540	VS-541
VS-LRX-3035	0.3x wide angle lens adapter	27mm 30mm, 30.5mm, 34mm, 37mm, 43mm	OK	N/A
VS-LRX-5050	0.5x wide angle lens adapter	27mm, 30mm, 30.5mm, 34mm 37mm, 43mm	OK	N/A
VS-LRX-731	0.7x wide angle lens adapter	37mm, 43mm, 49mm, 52mm 55mm	OK	OK

VS-P1000V PoE+ In-Line Injector

For use with VS-57X & VS-57XA Dome Cameras.

- 10/100/1000Mbps
- Input: 100-240V
- Output: 56V 0.6A (33.6W)
- CISPR 22 'B', VCCI 'B', FCC 'B' Compliance
- Lightweight: 185 g
- Efficiency 83% Typical
- Over-Voltage Protective Installation
- Short-Circuit Protective Installation
- Protection Type: Auto-Recover
- 802.3at Compatible
- Operating Temperature -10°C~55°C
- FOR INDOOR USE ONLY

Power Supply

VS-PS12-5V
12V / 5 Amp Barrel Plug Power Supply for box and PTZ IP Cameras.

VER. 2.0

VS-TRM-200 / VS-TRM-202 / VS-TRM-204

Rack mount holder for mounting up to 16 VS Encoder / Decoders in a 5 RU space

Operating Conditions
- Temp: 5 - 50 ºC

Connections
- Power: 100-240 VAC, 50/60 Hz, 1.6 A

Dimensions and Weight
- Height: 210 mm / 8.3 in (5 RU)
- Width: 482.8 mm / 19 in
- Depth: 145 mm / 5.7 in
- Weight: 6.7 kg / 14.8 lbs

VS-TRM-200	**Rack mount holder for 16 pcs of VS-11**
VS-TRM-202	**Rack mount holder for 16 pcs of VS-102 or VS-103**
VS-TRM-204	**Rack mount holder for 16 pcs of VS-14**

* Shown with optional modules installed

Audio Production Accessories

VS-LSC L/R In-Out Lip SYNC Corrector

The Stereo Lip SYNC Corrector is a compact device that corrects audio delay between audio and video. When distributing video over long distances through multiple devices like distribution amplifiers and set top boxes there can sometimes be a noticeable delay which results in audio being played before the video. This device lets you manually adjust the audio delay from 0 ~300 ms allowing you to perfectly synchronize your audio and video, so when it reaches the display your media is synched and ready to go. The Lip SYNC Corrector is an affordable and compact device that can be used to correct audio sync going to your Video Encoder or Producer's Station Audio Input.

VS-HAE HDMI Audio Extractor

The HDMI Audio Extractor is a device that allows you to extract audio signals from your HDMI source. When connecting with a TV or display you don't always get great audio, or in the case of a display, no audio at all, so with this Audio Extractor you can take your original HDMI audio signal and convert it to optical and analog L/R audio. What this means is that you can output your audio signal to external speakers or extend your audio signal. Ideal for your VS-102 Encoder or PS-102 Producer's Station.

VS-HAI HDMI Audio Inserter

The HDMI Audio Inserter is a device that lets you insert external audio into your HDMI/DVI source. The device allows you to insert stereo and multi-channel surround sound to give users the capability to select and insert their Sweetened audio formats into the HDMI program feed. Ideal for your VS-102 Decoder.

VS-H60

Weatherproof Housing for IP Cameras.
Optional Sunshield, Heater, Blower, Defroster, Wiper & PoE+

- **IP66 rated water proof and vandal resistant enclosure**
- **Die cast aluminum construction resists damage**
- **Built-in heater, blower and sunshield (VS-60-SHB)**
- **Includes wall mount bracket with cable feed-through**
- **Easy access to the camera**
- **Special M20 cable gland provides easy access to RJ 485 connector**
- **Includes wall mount bracket**

* Camera Not Included
* Shown with optional Wiper

Models	VS-H60 VS-H60-S VS-H60-SH VS-H60-SHB VS-H60-SHBD VS-H60-SHBDW VS-H60-SHBDWP		**External Dimensions**	VS-H60: VS-H60-S: VS-H60-SHB: VS-H60-SHBD: VS-H60-SHBDW:	173(W) x 116(H) x 428(D)m/m 184.6(W) x 127.3(H) x 460(D)m/m 184.6(W) x 127.3(H) x 460(D)m/m 7.3(W) x 5.0(H) x 18.11(D)in
Usage	Indoor / Outdoor		**Weight**	VS-H60: VS-H60-S: VS-H60-SHB: VS-H60-SHBD: VS-H60-SHBDW:	2.3kg / 5lbs 3.0kg / 6.6lbs 3.6kg / 7.9lbs
Input Power	24VAC				
Power Consumption	VS-H60-SHB VS-H60-SHBD VS-H60-SHBDW	24VAC: 22W 24VAC: 30W 24VAC: 36W			
Enviromental	VS-H60 / VS-H60-S VS-H60SHB VS-H60-SHBD VS-H60-SHBD-W	Temperature: -15°~+50°, Humidity: 100% Temperature: -35°~+55°, Humidity: 100% Temperature: -40°~+55°, Humidity: 100% Temperature: -40°~+55°, Humidity: 100%	**Material**	Aluminum, Glass, Plastic	
Thermostat	Heater: ON 4°±3°, Blower: ON 45°±5 °		**Ingress Protection**	IP66	

VS-NVR-910 / VS-NVR-1610

Standalone 9CH, 16CH NVR

- **Support 9 or 16 channels**
- **2 x HDD (SATA)**
- **2 x e-SATA**
- **Ethernet 10/100/1000Base-T**
- **Power full client software**

Video	Input	Max 9CH or 16ch (Network)	**General**	Certifications	CE, FCC, KC, RoHS
	Compression	H.264, MJPEG		External devices	1 x RS-232 port 1 x RS-422/485 port 1 x Buzzer (88dB min) 2 x USB2.0 (Backup / HDD)
Recording	Bitrate	64Mbps (All channels)		Power supply	Min DC12V/5A(with HDD 2ea)
	Resolution	352x240 ~ 2592x1936		Power Consumption	DC12V, Max 4A(at booting with HDD 2ea) Max 1.5A(at operating with HDD 2ea)
	Mode	Continuous, Event(Pre/Post), Schedule		Operating Temp.	5°C ~ 40°C (41°F ~ 104°F) / 80% RH
Playback (Network)	Simultaneous playback	9CH / 16H		Dimension	215(W) x 316.2(L) x 84.6(H)
	Resolution	352x240 ~ 2592x1936		Weight	2.86kg(with HDD 2ea), 1.55kg(without HDD)
Audio	Compression	G.711 / AAC	**Storage**	Internal disk	2 x HDD (SATA)
User interface	LED	Operation status display		Extension	2 x e-SATA
Network	Interface	2 x Ethernet 10/100/1000Base-T (RJ-45)	**Backup (Network)**	File format	AVI, MP4, Native (Player embedded), WMV
	Protocol	IPv4/v6, TCP, UDP, Multicast			
	Camera connection/Streaming	MEI Protocol, ONVIF, Generic RTSP			
	Management software	NVR Manager			
	Client software	VMS Client, VMS Web Client			

Features, specifications, and dimensions are subject to change without notice.
Physical appearance of products may vary slightly from images shown on this document. Please visit our website for updates and information.

VER. 2.0

Marshall Electronics

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